



Running TEMPO on Atmos

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Instructions

- Four slides of numbered instructions
- Summary:
 - go to <https://atmos-portal.hesc.epa.gov>
 - Open Jupyter Hub
 - Open a Notebook
 - Click play
 - Review code and notes
 - Repeat
- If something isn't working go to a break out room

1. Instructions numbered in green boxes.

Notes in grey.

Draws attention

Lots of pictures!

Start Jupyter on Atmos

- 1) Connect to the EPA Network or VPN
- 2) Open a web browser
- 3) Go to <https://atmos-portal.hesc.epa.gov>



Environmental Topics

- 4) Click OnDemand HPC Portal
- 5) Login with your LAN ID and password

Atmos Portal

This site provides a web based interface to the High-End Scientific Computing (HESC) High Performance Computing (

Login Nodes

[Atmos1](#)
[Atmos2](#)
[Atmos3](#)
[Atmos4](#)
[Atmos5](#)

Services

[OnDemand HPC Portal](#)
[Jupyter Hub w/ Jupyter Lab](#)
[Atmos Jobs Map](#)

Support:

[HESC Technical Support \(email\)](#)
[HESC User Guide](#)
[HESC SharePoint Site](#)

- 7) Configure
 - v3.2.9
 - Login Q
 - Your group

- 8) Click Launch
- 9) Wait, then Connect

The screenshot shows the EPA Atmos Cluster Portal. The top navigation bar includes the EPA logo and links for Apps, Files, Jobs, Clusters, and Interactive Apps. The main content area is titled 'Welcome to the High End Scientific Computing (HESC) Atmos Cluster Portal.' Below this, there's a 'Pinned Apps' section with a grid of app icons: Desktop, Jupyter Lab (highlighted with a red box), RStudio Server, and Atmos Cluster Shell Access. A red box also highlights the 'Jupyter Lab' app icon in the grid. Below the grid, there's a 'Jupyter Lab' section with a description: 'This app will launch a Jupyter Lab server on one or more nodes.' The configuration form includes dropdown menus for 'Jupyter Lab Version' (set to 3.2.9), 'Slurm Queue' (set to Login), and 'Slurm Account' (set to romo). There's a text input for 'Number of hours' (set to 8). At the bottom, there are two buttons: 'Launch' and 'Connect to Jupyter Lab' (both highlighted with red boxes).

Apps Files Jobs Clusters Interactive Apps

Welcome to the High End Scientific Computing (HESC) Atmos Cluster Portal.

Pinned Apps A featured subset of all available apps

Desktop System Installed App

Jupyter Lab System Installed App

RStudio Server System Installed App

Atmos Cluster Shell Access System Installed App

Announcements and Links

Services

- Atmos Jobs Map

Support

- HESC Technical Support (email)
- HESC User Guide
- HESC SharePoint Site

Jupyter Lab

This app will launch a Jupyter Lab server on one or more nodes.

Jupyter Lab Version

3.2.9

Version of Jupyter Lab you want to load.

Slurm Queue

Login

If left empty, default queue is 'compute'

Slurm Account

romo

Number of hours

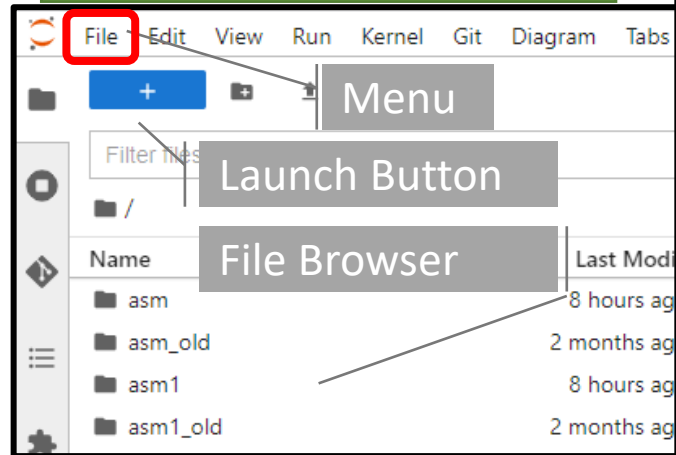
8

Launch

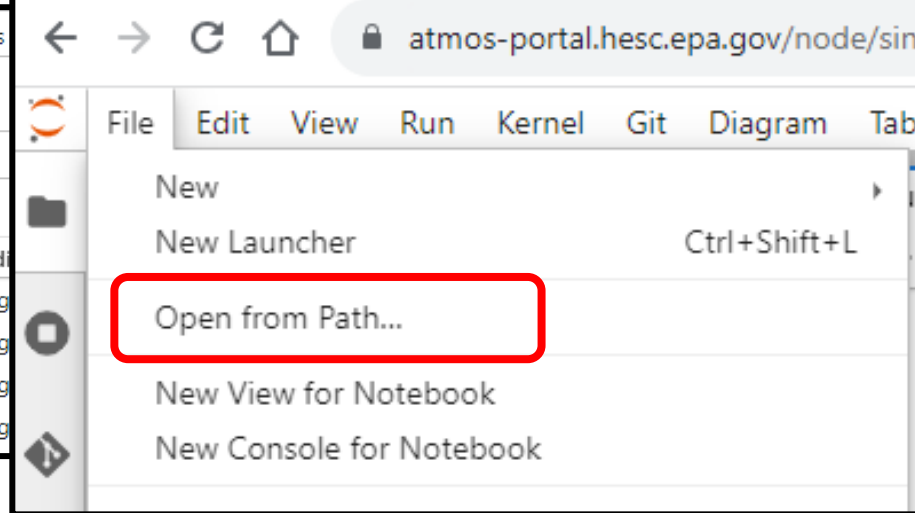
Connect to Jupyter Lab

Go to Tempo Training Notebook 1

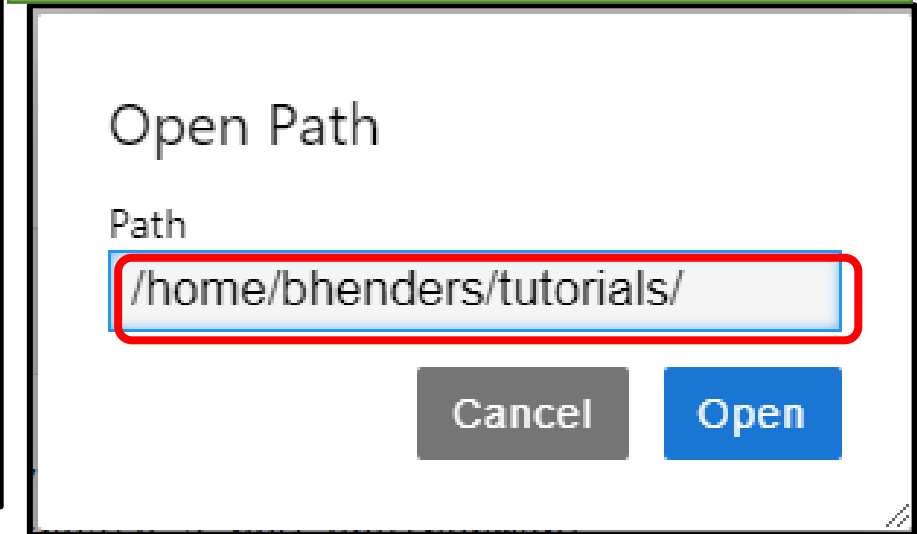
1. Click File



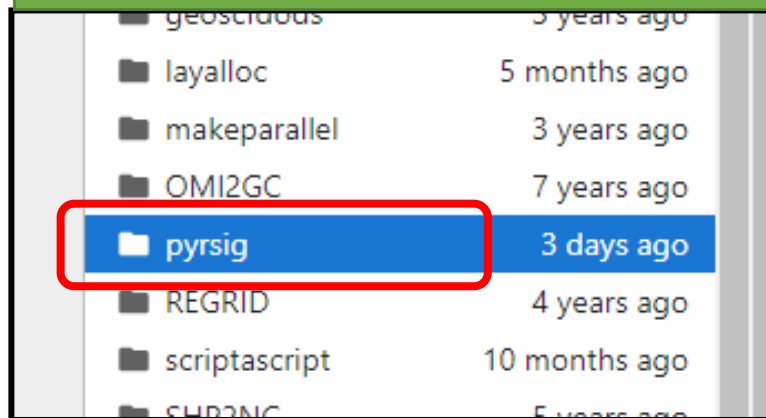
2. Choose Open from Path...



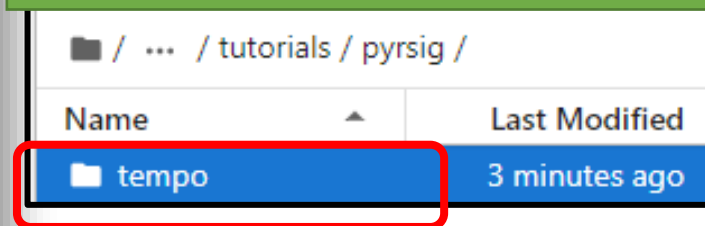
3. Enter /home/bhenders/tutorials/



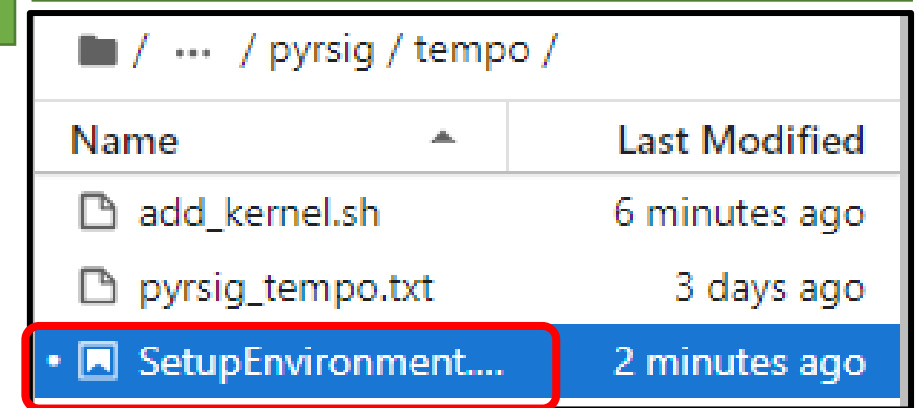
4. Double Click pyrsig



5. Double Click tempo



6. Double Click SetupEnvironment.ipynb



Configure Python Environment

- Configure system once for training
 - Common training environment
 - Not strictly necessary, more predictable.
- Notebooks have “cells”
 - Code or Markdown
 - Play button runs one “cell”.
 - Code cells have output.
- This cell is a bash command to install a “Virtual Environment”

Cell status:
[] not run
[*] running
[1] run order

SetupEnvironment.ipynb

Virtual Environment Setup

author: Barron H. Henderson
contributor: Jeff Willison

`add_kernel.sh` is a script that will create a "Virtual Environment on Atmos"

- First, get script usage with the `-h` command.
- Second, create a virtual environment for this training called `tempo_env`

Get Help

```
[1]: %%bash
./add_kernel.sh -h
```

Usage ./add_kernel.sh [-h] [-y] ENV_DIR [ENV_NAME [REQUIREMENTS]]
Install a Python virtual environment for use as a Jupyter Kernel

-h : print usage help
-y : answer yes to confirmation prompt
ENV_DIR : required path to create a new environment
ENV_NAME : optional str for the name of the kernel
REQUIREMENTS : optional path for required libraries.

A cell input can contain Python (default) or bash

A cell output can be text or a figure

- 1) Play until Get Help code has [1]
- 2) Click play until Create Environment code has [2] before it

- Actual number (1 or 2) doesn't matter
- Final output should end:

Installed kernel spec tempo_env in /home/<user>/local/share/jupyter/kernels/tempo_env

Open Hands-on Notebook

The image shows a JupyterLab interface with several annotations:

- 1) Double Click tempo_pysig.ipynb**: Points to the file in the left sidebar.
- 2) Clear old results**: Points to the "Restart Kernel and Clear All Outputs..." option in the Kernel menu.
- 3) Run the "cells" by clicking play**: Points to the play button in the notebook toolbar.
- 3) Change "kernel" to tempo_env**: Points to the "tempo_env" option in the "Select Kernel" dialog.

The notebook content displays:

TEMPO via RSIG

author: Barron H. Henderson
date: 2023-04-26

This notebook uses TEMPO Proxy data from NASA via the Earth's Remote Sensing Information Gateway (RSIG) via a python interface (pysig).

Example:

1. Make a time-series for a selected location.
2. Make a quick animated map for one scene

Why can't you save?

Whose directory are you in?

Any solutions under "File" menu?

<https://gist.github.com/barronh/6faf2008a0cf0ac9e49543f31c300601>



Compare your results to [Github](#)

Questions?

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